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A Review of Current Graduate and Research Activities

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From the Annual Report for 1951-1952 of the Dean of the Graduate School to the President of the University

The JOURNAL *presents those portions of the Annual Report of Dean Chester M. Alter, of the Graduate School, that may prove to be of general interest. The report begins with statistics on student enrollment; these will be found on p. 84 below.*

Graduate School Survey Committee

The academic year 1951-1952 will be recorded in the history of Boston University as one in which a consideration of objectives primarily occupied the composite mind of the University. Two years ago, I reported the formation of a Graduate School Survey Committee, the purpose of which was "to undertake a comprehensive study of the possibilities of the future of the Graduate School and to report on feasible goals towards which we might reasonably aim in the next decade." After two years of work, this committee submitted its report to the Dean in September, 1951. This report has served as a guide and a goal to the administration of the Graduate School, as well as resource material for the later constituted Committees on Objectives of the University—all of which have a bearing on the work of the Graduate School. The work of the Committee on Objectives in Graduate and Professional Education and the Committee on Objectives in Research has perhaps the most particular application to interests of this School. The Graduate School faculty, which includes members of many of the other faculties of the University, was well represented on these committees.

Recommendations of the Survey Committee

Of the forty recommendations made by the Survey Committee, several have already been adopted with the hope that the quality of our graduate education will be improved. I can mention only a few of these.

The Survey Report recommended that the administration arrange to promote exchange of information for the mutual stimulation of the Schools and Colleges. In April, 1952, the first issue of the BOSTON UNIVERSITY GRADUATE JOURNAL, a periodical designed to review the current graduate and research activities of the University, appeared under the editorship of Professor Malcolm E. Agnew. With its wide distribution throughout the University, as well as among other institutions, foundations, and industries, it is believed that this publication will meet a long-felt need.

Several recommendations of the Survey Report involved increased coordination of the many degree and research programs of the several Schools and Colleges of the University. In my earlier reports, I have also called attention to this problem. We need to be clear regarding the distinction, for instance, between the Master of Arts degree program with a major in Education and the Master of Education program which is administered by the faculty of the School of Education; between the Ph.D. program in Theological Studies and the Th.D. program; between the graduate programs in music as administered by the Graduate School and those under the jurisdiction of the College of Music. I do not believe these are insuperable problems, but they do have troublesome aspects which need the best thinking of our university faculties, and I am glad to report that progress has been made toward their solution.

Throughout the Report there is reflected the belief in the importance and responsibility of the academic departments in the development and administration of graduate education. In its foreword is the statement, "There is no single pattern for the complex process of changing an applicant for admission to the Graduate School into a full-fledged scholar; rather such a transformation demands the flexible cooperation of all the facilities of the University." Later the report continues, "In this belief, we recommend that the Graduate School and the departments and divisions maintain a generous flexibility in their requirements, while they continue, of course, to encourage the development of the highest standards commensurate with the nature of the field. Especially important, we think, is the department or division in maintaining this elasticity, this freedom from rigid requirements. The departments, in fact, are the heart of the Graduate School; their interest and concern in graduate studies and research make the Graduate School." In line with this point of view, the faculty of the Graduate School has now delegated a large measure of responsibility for the determination and administration of foreign language requirements to the several departments.

I want to quote one other recommendation of the Survey Committee. "We recommend that the highest authorities in the University emphasize again and again — once is not enough — the importance to society and to the University of its research mission and (a point which needs perhaps even greater stress) of the research mission of all parts of the University." I am glad to report the increasing interest and support of the Trustees and Administration of this University in this matter of particular concern to the Graduate School.

Current Issues

Those who are interested in and responsible for graduate education are faced with problems and issues not always of their own making, but with which they must cope if higher learning is to continue to contribute to society. These

issues change from time to time, and often they develop so rapidly that they are not immediately recognized as having potential impacts on graduate education. Of all such issues, I note five of outstanding importance.

1. *New Labels for Old Ideas.* The technique of using new words to describe old ideas, products, materials, or activities, so common in our commercial world, is not new in the field of education; it is being utilized and applied, however, in new ways and perhaps with different motives. Students applying for admission to the Graduate School are presenting as credentials new kinds of undergraduate degrees; new undergraduate majors or no majors at all; new kinds of letters of recommendation or, instead perhaps, documents of objective evaluation — profiles instead of personal judgments. Even more important, we find colleges themselves adopting new labels, but when we remove the wrapper of words about their programs, we find that the men on their faculties are about the same kind as those who taught us; that their best students are probably going to become leaders of society as have the best students of the past; that even their stated objectives sound mildly familiar. Those who are responsible for graduate work, for training students in advanced scholarship, for leading young men and women in their intellectual and creative development, must learn to feel the cloth as well as to look at the label when deciding on the merits of a prospective graduate student or judging the quality of a new undergraduate program as background for advanced study.

2. *Increased Cost of Graduate Education.* The issue of increased costs of graduate education is a concern to all involved, and many are involved. The student, his parents, perhaps his wife and children, the faculty, the graduate school, the university, the government, the community, the church, the professions, industry, the coming generations, all these have a stake in our ability to solve this problem. While many suggestions are forthcoming and a few of them are contributing mildly to the alleviation of this severe problem, I view this issue as one which needs even greater thought and action.

3. *Preparation for College Teaching.* The question of how best to train a college teacher is receiving much current attention. "Does the prospective college teacher need experience in research?" "Should he be broadly or narrowly trained?" "Does he need more training in technique and (presumably) less in content?" "Is he to be a chemist or *just* a teacher of chemistry?" This last question could equally well be put, "Is he to be a teacher of chemistry or *just* a chemist?" We have heard these and many other questions asked regarding this issue. There will be no one final answer to this problem as long as the integrity of individuals is recognized, and this is fortunate. Nevertheless, the place of the graduate school in the preparation of teachers is an issue worthy of increased consideration.

4. *The Acceptability of Sponsored Research Projects.* For several years and particularly since World War II, we have witnessed the growth in number of sponsored research projects on the campuses of American universities, a fact which has various implications for the graduate schools. Such projects tend toward the applied forms, but individual projects do vary all the way from pure, theoretical research to strictly developmental enterprises. The extent to which we permit applied research to replace pure research, admitting uncertainty in the

definition of these terms, will affect the long-range quality of graduate education in our universities. We certainly must not have exclusively the one; we probably should not have solely the other; the maintenance of a desirable balance is the part of wisdom.

5. *Student-Centered Versus Problem-Centered Research.* Shall the student research be conceived by the student, planned by the student, prosecuted and reported by the student with only occasional guidance from the major professor, or should the latter play a more active part in the whole endeavor? In some disciplines, it appears traditional for graduate students to do their research on problems of great interest to their professors, to publish the results under joint authorship with the professor, and to become disciples, so to speak, of the professor. Graduate students in such fields become partners (or sometimes merely hired-hands) of the professor, contributing as they come and go to a chain of articles on some particular subject in the technical journals. The graduate research project in the sciences almost always results in a joint-authorship article. On the other hand, it appears that just the opposite procedure is traditional in other fields. The professor and student of the humanities do not often join in the writing of the article or book which results from the dissertation research. The growth of group or team research presents another facet of this issue. May a group of graduate students from the same or related disciplines attack an intellectual problem, solve it jointly, and report the study in one dissertation to the satisfaction of a graduate faculty for the purpose of meeting the research requirements for the Ph.D. degree? It is a problem of current interest.

There are many more issues which are before us constantly, new ones evolving each year. The graduate schools of the nation, as well as the universities of which they are parts, have been under attack by their critics for their failure to change in keeping with the needs of the times. But we must be sure that basic needs have really changed before we undertake to modify the details of our objectives and techniques; otherwise, we may go in this, that, and every direction, just for the sake of going. But, of course, we must not rebel against change when change is clearly needed, solely because we enjoy rebellion or dislike change.

The Year's Work

During the academic year, the faculty of the Graduate School has been involved in an increasing number of scholarly activities as is clearly shown by the reports of the chairmen of the several departments. Many of these activities have been made manifest through publications, seminars, professional meetings, and travel. The annual reports of the Graduate Departments and Divisions are a source of information not available anywhere else in the University. They report progress and problems, hopes and failures, plans and accomplishments. Because we have not found a way to publish these reports, we place them on file in the office of the Dean of the Graduate School, where they are available to members of the faculty.

Specific developments of the year which should be mentioned are:

1. Inauguration of a program of cooperation with the Worcester Foundation for Experimental Biology, Inc.

2. Establishment of a cooperative program with the U. S. Department of Agriculture Graduate School, of special interest to government personnel in the Greater Boston Area.
3. Consideration of an interdisciplinary African Area Studies program involving the interest of several departments.
4. Establishment of a chapter of The Society of the Sigma Xi, the National Honorary Scientific Research Society.
5. Publication of the Boston University Graduate Journal, a monthly review of current graduate and research activities in the University, sponsored by the Graduate School.
6. Reorganization of the Graduate School Board, as described below.
7. Establishment of a graduate certificate program in Aerial Reconnaissance in cooperation with the U. S. Air Force.
8. An increased emphasis in several departments on graduate student advisement and counselling.

Professors Charles P. Huse and George M. Sneath have resigned as chairmen of the Departments of Economics and English, respectively. The gratitude of the Graduate School for the long service of these men in these administrative posts is hereby recorded. Associate Professor Everett J. Burtt, Jr., and Associate Professor Donald J. Winslow will serve as acting chairmen of their departments during the coming year.

This report should also record the resignation for reasons of health of Professor Edgar S. Brightman as member and chairman of the Graduate School Board after years of thoughtful and efficient service. The development of Boston University's Graduate School has in no small measure been the result of the time and thought devoted to it by Professor Brightman. On the recommendation of the Board, the President appointed the Dean of the Graduate School as the chairman of its Board.

At the end of this academic year, Dr. Genevieve Young, Associate Professor of Biology, retires as a term representative of the College of Liberal Arts on the Graduate School Board. Her place on the Board will be taken by Dr. Lowell V. Coulter, Associate Professor of Chemistry. We appreciate the willingness of these two members of our faculty to serve the Graduate School in this capacity.

During the past academic year, Dr. Warren O. Ault, Chairman of the Department of History, and Dr. Sanford B. Hooker, Professor of Immunology, have served with distinction as University Lecturers. On the recommendation of the Graduate School Board, Dr. Karl Geiringer, Professor of Musicology, and Dr. Elmer A. Leslie, Professor of Hebrew and Old Testament Literature, have been selected as the recipients of this honor for 1952-1953.

To my colleagues on the faculty, I extend my hearty thanks for their splendid cooperation and their many acts of kindness during this year. My personal thanks I extend to the loyal staff of the Graduate School office and to the many University administrative officers, all of whom contribute to the well-being of the Graduate School. To the President, Treasurer, and Trustees, I express our sincere thanks for judicious support, efficient leadership, and sympathetic guidance.

Enrollment

The registration figures for the past two years are as follows:

1950-1951	1662
1951-1952	1671

The classification of the students for 1951-1952 was as follows:

Candidates for A.M.	878
Candidates for Ph.D.	627
Not Degree Candidates	32
Candidates from other Schools and Colleges	134
	1671

The students in the Graduate School in 1951-1952 had already received degrees from 332 different institutions, representing forty-two states and sixteen foreign countries; and according to their home addresses, came from forty-three states, three territories, and eleven foreign countries.

The institutions represented by five or more students [numbered fifty-five].

The number of degrees granted by the Graduate School for the past two years follows:

	A.M.	Ph.D.	Total
1950-51	298	41	339
1951-52	249	45	294

[The academic histories and titles of dissertations of the forty-five candidates promoted to the degree of Doctor of Philosophy in June, 1952, will be found on pp. 40-43, in the JOURNAL for June, 1952.]

FOREIGN STUDENTS AT THE GRADUATE LEVEL

Of the foreign students, i.e., students from outside continental United States, studying at Boston University this current semester, 99, from 38 countries, are enrolled in Schools and Colleges at the graduate level. The Graduate School has 30 such students; the School of Medicine, 20; the College of Business Administration, Graduate Division, 11; the School of Theology, 11; the School of Social Work, 10; the School of Public Relations and Communications, 9; the School of Law, 5; the School of Nursing, 2; and the School of Education, 1.

The largest national groups in all these Schools and Colleges number 9 each from Canada and Germany. The other countries or territories represented, with the number of students from each, are: India, 7; China, 6; Greece, Hawaii, Philippines, and Puerto Rico, 5 each; Japan, 4; Czechoslovakia, Lithuania, and Norway, 3 each; British West Indies, England, France, Gold Coast, Hungary, Korea, Latvia, Nigeria, Thailand, 2 each; and finally, with 1 each, Chile, Denmark, Egypt, Ethiopia, Finland, Guatemala, Iran, Iraq, Israel, Italy, Liberia, Malaya, Mexico, Poland, Spain, Sweden, and Uruguay.

Knowledge descends with modification like everything else. And just as there is no organism that has not descended from others nearly like it, so there is no knowledge but has sprung from the loins of past knowledge not greatly different.

—Samuel Butler, *Notebooks*

The Physical Research Laboratory

by Various Members of the Staff

The laboratory's program is directed toward the improvement and development of techniques and equipment in the field of aerial photography, or more generally, of aerial reconnaissance. Fundamental to an understanding of the broad scope of the program is the laboratory's concept of the aerial photographic system as one which is, in its simplest sense, a communication system. It maintains that the proper study of aerial photography should not be concerned primarily with an isolated camera in an aircraft, but rather with a number of factors, all of equal importance, and comparable to links in a chain: the message itself, that is, the information or ground detail which is to be recorded; the atmosphere through which this information must be transmitted; the camera components—lens, filter, emulsion, shutter, magazine; the transport of the camera, that is, the aircraft in which it is flown and the mounting of the camera; the interpretation of the print or negative, which leads to the end product— a report in words. Indeed, it may be said that the laboratory's basic problem is one of improving the efficiency of the photographic process as a carrier of information from the target to the photointerpreter.

Following are brief summaries of the activities of but some of the research groups.

Electronics Section

The problems of aerial reconnaissance have been considered, in the past, to be solely of an optical and photographic nature. Today, with the advent of electronic developments such as television and radar, and with the introduction of the general concepts of information theory, it is possible to recast the problems of aerial reconnaissance within a much broader framework.

By means of these concepts, it is possible to consider the problem of aerial reconnaissance to be a specific case of the general problem of optimising a two-dimensional communications system. The electronics research section, therefore, is carrying out an intensive research program directed towards the analysis and synthesis of optical systems.

Within the program it is recognized that many functions which are commonly performed optically can, under certain conditions, be better done electronically. A basic tool, in this respect, is television. A program of research and development is therefore being carried on to apply television techniques to aerial reconnaissance.

A part of the program is also directed towards automatic control of the combined optical and electronic system in terms of its over-all function.

Optical Shop

The activities of the optical shop center about the fabrication of large lenses and mirrors. These optics are usually of a prototypic or experimental nature, and a continued effort is being made to investigate new materials and methods. The fabrication of a high-quality lens as usually carried out in the laboratory represents an interesting combination of machine and hand techniques. The raw optical glass is supplied in the form of heavy discs. A typical blank is twelve inches in diameter and six inches thick, although much larger pieces have occasionally been used. A special machine with a diamond abrasive wheel generates the necessary curved surfaces and brings the lens quite close to its final di-

mensions. Hand or semi-machine methods may be used for final fine grinding prior to polishing. On very massive pieces of glass, all work must be done by machine. A major effort in the laboratory is being directed to the development of modern machine techniques for handling large pieces of glass. The need for such techniques has become very important since American manufacturers have begun the mass production of large pieces of optical glass.

Unusual optical problems are often undertaken by the laboratory. Recently, for example, a fast, large-aperture, Schmidt collimator was made in which both corrector plate and primary mirror were aspheric surfaces. Another project involved a spherical projection lens in which one precision glass sphere about two and one-half inches in diameter rests inside a second sphere about seven inches in diameter.

An important part of the entire process is that of testing the optical surface during the final polishing or "figuring." This testing is carried out by optical and interferometric methods, and it measures defects in surface contour in wavelengths of light. The final surface generally deviates from the desired surface by only a few millionths of an inch. This testing is done in a specially insulated room in which there are very small fluctuations in temperature.

Photo-physics

One of the projects this section is engaged in is the development of rapid processes for developing and fixing aerial photographic negatives and prints. The aim of this work is to formulate processing solutions that will develop and fix the photographic image in one solution instead of the three that are ordinarily used, and will also complete the process within one to two minutes rather than the five to ten minutes ordinarily needed. The conventional method of processing, for example, requires not only immersion of the photographic film in an alkaline solution of a developing agent, which turns the exposed silver salt in the film black, but also a short rinse in an acid bath, which renders the black image permanent by removing the unexposed silver salts. Since this fixing bath is ordinarily acid, as stated, the problem of combining the two processes is rather complicated. An attempt is being made to perfect a single solution that will process both contact and enlarging papers completely in one or two minutes.

In line with a demand for rapid delivery of information from photographs, this section is also studying methods of viewing the developed negative as a positive without going through the usual process of making prints. There are several ways this may be done. One method under consideration involves the use of special phosphorescent materials which glow when exposed to blue light and stop glowing when exposed to red or infrared light. A plate coated with these materials may be exposed through the negative to produce at will either a negative or positive image, depending on the order in which the plate is exposed to the blue or infrared light.

Another method being investigated involves treating the developed film, before it is dried, with another solution which converts the black silver to a light-colored silver salt, so that the negative by reflected light appears as a positive. Formulas have been developed which do not affect the printing properties of the negative by transmitted light, so that prints may be made from these specially treated "negative positives."

[*To be concluded in the December* JOURNAL.]

Record of Research—III

The following list of books and articles published recently by members of the University staff or by students was compiled partly from information made available in the offices of the President of the University and of the Dean of the Graduate School, and partly from the *Boston Medical Quarterly,* a publication of the Boston University School of Medicine and the Massachusetts Memorial Hospitals.

Biochemistry

TARAIL, ROBERT, HACKER, ELAINE S., and TAYMOR, ROBERT. "The Ultrafiltrability of Potassium and Sodium in Human Serum," *Journal of Clinical Investigation,* 31:23-6, 1952.

WALKER, BURNHAM S., BOYD, WILLIAM C., and ISAMOV, ISAAC. *Biochemistry and Human Metabolism.* Baltimore: The Williams and Wilkins Co., 1952. 812 pp.

Chemistry

GENSLER, WALTER J. "Isoquinoline," being Chapter 2 in Elderfield's *Heterocyclic Compounds,* IV, 1952.

———. "The Synthesis of Isoquinolines by the Pomeranz-Fritsch Reaction," being Chapter 4 in *Organic Reactions,* VI, 1951.

GENSLER, WALTER J., BEHRMANN, ELEANOR M., and THOMAS, GEORGE R. "Preparation of Unsaturated Fatty Acids," *Journal of the American Chemical Society,* 73 (1951), 1071-74.

GENSLER, WALTER J., and ROCKETT, JOHN C. "Ring Cleavage of 1-Benzenesulfonyl-2-benzylethylenimine with Hydrogen Bromide," *ibid.,* 74 (1952), 4451.

GENSLER, WALTER J., and SAMOUR, CARLOS M. "The Single-Stage Conversion of 1-(3′,4′,5′-Trimethoxyphenol)-6,7-methylenedioxy-3, 4-dihydroisoquinoline to 2-(3′,4′,5′-Trimethoxybenzoyl)-4,5-methylenedioxystyrene," *ibid.,* 2959-62.

Dermatology

RONCHESE, FRANCESCO. "Patissier's Industrial Dermatoses," *Arch. Indust. Hyg.,* 5:347, 1952.

———. "Prenatal Wart," *Arch. Dermat. & Syph.,* 65:230-1, 1952.

Education

MAKECHNIE, GEORGE. "School Camping," *Massachusetts Teacher,* 31 (1952), 6-8.

———. "Teacher Education in School Camping and Outdoor Education," *Education,* 73 (1952), 71-74.

READ, JOHN G. "Utilizing Opportunities for Outdoor Education," *Education,* 73 (1952), 34-36.

TURNER, MARY LOU. "Bringing Wild Life into the Classroom," *Education,* 73 (1952), 37-40.

VINAL, WILLIAM G. "The Roots of Camp Education Go Deep," *Education,* 73 (1952), 27-33.

WYLIE, JAMES A. "Camping and our Schools—An Editorial," *Education,* 73 (1952), 3-5.

———. "Camping and the Educational Needs of Children," *ibid.,* 6-10.

English

BADGER, KINGSBURY. "The Ordeal of Anthony Froude, Protestant Historian," *Modern Language Quarterly,* XIII (March, 1952), 41-55.

WAGENKNECHT, EDWARD. *An Introduction to Dickens.* Scott, Foresman and Co., [c. 1952], x + 880.

German

PEEBLES, WALDO C. "Heine and Swedenborg," *The New Christianity,* 18 (1952), 95-101.

History

BOGLE, VICTOR M. "Settlement of New Albany," *Indiana Magazine of History,* 48 (1952), 277-288. A revised chapter of a Boston University doctoral dissertation.

MOODY, ROBERT E. (ed.) *A Letter of the Reverend John Eliot of Roxbury to the Reverend Thomas Shepard of Charlestown, August 22, 1673, concerning the state of the gospel work among the Indians.* Privately printed by the Friends of the Library, Boston University, 1952. 4 pp. with collotype plate.

Legal Medicine

JETTER, WALTER W., and SHEFLEN, A. E. "Delayed Manifestations of Hypoglycemic Coma," *J. Neuropath. & Exper. Neurol.* 11:317, 1952.

SHEFLEN, A. E., REINER, E. R., and JETTER, WALTER W. "Fatalities in Insulin Therapy of the Psychoses," *Arch. Neurol. & Psychiat.,* 67:32-43, 1952.

Medicine

BONNER, CHARLES D. "Electrolyte-balance Studies in Normal Volunteers and Clinical Observations on the Effects of Cation-exchange Resins in Patients with Cardiovascular Disease and in Subjects Receiving Pituitary Adrenocorticotrophic Hormone (ACTH)," *New England J. Med.,* 247:158, 1952.

LOWELL, FRANCIS C., SCHILLER, IRVING W., and LOWELL, A. "The Use of the Closed System in the Study of Asthma and Emphysema," *J. Allergy,* 23:335, 1952.

RATTIGAN, JOHN P., BYRNES, W. W., KRAUS, H., and SISE, H. S. "Audible Auricular Heart Sounds in Auricular Flutter," *New England J. Med.,* 246:130-1, 1952.

Philosophy

BRIGHTMAN, EDGAR S. *Persons and Values.* (University Lecture, April 16, 1951.) Boston: Boston University Press, 1952. 28 pp.

Psychology

HYMOVITCH, BERNARD. "The Effects of Experimental Variations on Problem Solving in the Rat," *The Journal of Comparative and Physiological Psychology,* XLV (August, 1952), 313-21.

Surgery

BYRNE, JOHN J., and O'NEIL, EUGENE E. "Fatal Pulmonary Emboli," *Am. J. Surg.,* 83: 47-9, 1952.

GASTON, EUGENE A., and WIGGLESWORTH, WILLIAM C. "Traumatic Rupture of the Body of the Psoas Muscle," *Arch. Surg.,* 64: 119-23, 1952.

He bade me also go on with collections which I was making upon the antiquities of Scotland. "Make a large book; a folio." BOSWELL: "But of what use will it be, Sir?" JOHNSON: "Never mind the use; do it."

—Boswell, *Life of Johnson*

Boston University Publications — I

The Boston Medical Quarterly

GEORGE W. SORENSEN
Research Assistant, Bureau of Publicity

The editors of the *Boston Medical Quarterly* first put its handsome, red, white, and black cover before the public in March, 1950. Inside, they stated the purpose of the new journal: "To provide information of professional interest by publishing articles, review articles (including outstanding student theses), clinics, abstracts of articles by staff members, and news of important developments in the School and the hospitals." Sponsors of "BMQ," as it has come to be called, are the Massachusetts Memorial Hospitals, Boston University, and the Alumni Association of Boston University School of Medicine.

Dean James M. Faulkner of the School of Medicine is editor and chairman of the board of editors. Board members are Philip D. Bonnet, M.D., Chester S. Keefer, M.D., Reginald H. Smithwick, M.D., Samuel V. Vose, M.D., Burnham S. Walker, M.D., and Louis Weinstein, M.D. Close workers with the editors are Mr. Allen S. Richmond, Director of the Department of Public Relations at Massachusetts Memorial Hospitals, and his assistant, Miss Evelyn Russ.

Three thousand copies of BMQ are circulated each quarter to School of Medicine alumni, faculty, staff members, hospital staff members, house officers, residents, trustees, other medical schools, hospitals, libraries, medical magazines, and the like. While the articles are presented for this audience primarily, there is much for the informed, curious, non-medical reader in the thirty-two pages of the quarterly. BMQ takes a breather occasionally, as in the present issue (September, 1952), where a model of good medical reporting, "Meningismus in Pneumonia—An Analysis of 39 Cases Observed at the Haynes Memorial and a Review of the Literature," by Martin Goldfield, M.D. and Louis Weinstein, M.D., is immediately followed by some excellent light writing in "The Evans in Peru (Peru Perused—Or Perambulations of a Pill Peddler)," by Franz J. Ingelfinger, M.D. The humorous story line does not conceal some fine medical and geographical reporting about Peru.

The editorial page reflects the constant concern of medical people for self-improvement and better understanding of everyone's task within the working frame of the Hospitals and the School. In the September editorial, Dr. Bonnet discusses differences between "authority" and "administration," a difference which presents peculiar problems to the doctor. The editorial calls for greater awareness by doctors of the differences between professional authority and administrative authority, concluding, "Doctors are a vital part of hospital administration, and as such they carry a heavy load of responsibility — particularly when professional concern for a patient's welfare cannot be completely reconciled with administrative concerns. Now that hospitals have become essential instruments of modern medical care, it is important that the methods of recognizing and making effective the peculiarly difficult role of the doctor in relation to hospital administration be re-examined and improved."

Student Research

Biology

A study of some biochemical changes in the body fluids of trichinized golden hamsters has been undertaken by George R. Bernard, United States Public Health Service Predoctoral Research Fellow in the Department of Biology.

Mr. Bernard was graduated from Harvard College in 1948 and received his A.M. from Boston University Graduate School in 1949. He has been a Teaching Fellow in Biology (1949-1950, 1951-1952) and an instructor of Biology (1950-1951). His research is under the direction of Dr. Arthur G. Humes, Associate Professor of Biology.

Trichinosis is a disease caused by the invasion of the muscles by minute *Trichinella spiralis* larvae. The usual source of the disease is uncooked, infected pork containing larvae which mature in the intestine and after fertilization liberate larvae which migrate to the muscles. From 20 to 35 per cent of all adults in the United States become infected with this worm at some time. It is considered, therefore, one of our major health problems. There is no known cure or simple yet reliable diagnostic test for trichinosis, and most cases probably are not diagnosed correctly. The purpose of the present research is to investigate some of the metabolic changes in the blood and urine of infected hamsters which might contribute to the development of some chemical remedy or new diagnostic test.

The first problem was to determine the lethal dosage of worms for the hamster. Then hamsters could be infected with a slightly smaller dose which would cause significant metabolic changes but would not kill the host. Long-term observations could then be made. In all cases the worms are isolated under controlled conditions from infected rat muscle and administered through a stomach tube.

The urine volume, pH (acidity or alkalinity), urinary uric acid, creatinine, and creatine concentrations have been studied in animals which received sub-lethal, lethal, and two times the lethal dose of larvae. Mr. Bernard has found that all hamsters which receive twice the lethal number of worms survive. He attributes this to competition by the worms in the intestine for the available food, which is inadequate to support all the worms. The ability of the female worms to produce larvae is therefore considerably lessened, and the host is subjected to a smaller stress and survives. Mr. Bernard designed and constructed cages to house the animals for indefinite periods and yet to permit quantitative collection of uncontaminated, undiluted urine.

Normal hamsters excrete about 5 cc. (about 100 drops) of urine a day. Infected animals excrete even less. Analytical procedures had to be altered in order to handle such small volumes.

In fatal cases, the urine pH falls, i. e., the urine becomes more acidic, as soon as the larvae are produced and begin to migrate to the muscle (about seven days after infection). The pH stays at a low level until death. No significant changes occur in the animals sublethally infected or those which receive twice the lethal dose. This finding plus the similarity of weight changes in these two groups and the evidence presented below supports the hypothesis that there are similar numbers of larvae produced in both types of infection.

A new physiological theory, the "Stress" concept of Selye, has been extensively investigated during the past decade. The gist of the theory is that certain physical or chemical "stresses" (intense, and therefore of short duration) will elicit practically the same physiological responses because of liberation of ketosteroid hormones (e.g.,

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Book Review: A Mirror for Americans

A Mirror for Americans: Life and Manners in the United States 1790-1870 as Recorded by American Travelers. Compiled and Edited by Warren S. Tryon. 3 vols.: I. "Life in the East" (pp. 1-230), II. "The Cotton Kingdom" (pp. 231-466), III. "The Frontier Moves West" (pp. 467-793). Illustrated. Chicago: The University of Chicago Press. 1952. $14.50 the set; $5.00 the individual volume.

[This book by Professor Tryon, of the Department of History, was published on November 7th. The following review was written for both the JOURNAL and *Bostonia* by Dr. Harvey Wish, Professor of History at Western Reserve University. Dr. Wish is the author of the two volume work, *Society and Thought in America,* published in 1950-52 by Longmans, Green.]

Recent anthologists have definitely fossilized the tradition that the daily life of Americans should be seen exclusively through the eyes of Europeans. Therefore, it has come to pass that we know a good deal about the Yankee habit of spitting tobacco juice and the other everyday mores as seen by Charles Dickens. We have learned about the tasteless, pushing American society from Frances Trollope. Thus objectivity was served.

Now Professor W. S. Tryon comes forward with the odd notion that perhaps Americans are at least equally qualified to tell us how the country appeared to them during the period between 1790 and 1870. It seemed decent to hear the culprit first and hang him afterwards. Tryon has drawn upon a rich background in social history to construct an image of America from trustworthy native materials, except for those that are easily accessible in general libraries. Hitherto, these accounts have been available only in the musty stacks of the rare book rooms in graduate school libraries.

Tryon has not had to rely upon the spread-eagle patriots who Carlyle believed made up the American people, but he has discovered many critical, objective, and even expert accounts without departing from rich human interest materials. For example, John Drayton, a cultivated Southerner who visited the North in 1793, jotted down full and rather acute notes on Boston's unique tax-supported school system for girls as well as boys. He watched a nearly fatal lynching bee in New York City when a frenzied mob was prevented by troops from seizing an alleged rapist. In this first volume, devoted to the East, there are fresh accounts of Shakers, political behavior in the cities, and the various social classes. The author ingeniously draws upon entirely different kinds of witnesses: prim ladies who see only endless grog shops, abandoned females, and uncouth Irish; scientists like Benjamin Silliman of Yale who can report precisely what he sees in religious communities. James K. Paulding, the Knickerbocker littérateur, tells of the hardships suffered by wealthy New York women. Unlike ordinary citizens who had nothing but food and shelter to worry about, they had to sit up all night before a society affair to keep their hair in "their proper buckram rigidity." Paulding, unlike European visitors, was disgusted by a new "lascivious dance" called the waltz.

Professor Tryon makes certain that the reader does not have a diet of mere froth. One may see the overcrowded

cobblestone streets of New York in 1837 and the tragic effects of the cholera epidemic. There were mobs, indifferent police, and at the best hotels unbelievably cheap meals averaging between 12 and 31 cents. Life at the Five Points included ragged beggars, drunken men and women, exploited sewing girls, and frequent cases of assault. Middle class successes and failures are given their meed or blame by credible observers.

There is little room here to summarize the other fascinating two volumes. In "The Cotton Kingdom," there are word pictures of the quaint Creole culture of old Louisiana, good and bad masters on the plantations, and the streets of New Orleans, where the lives of Irishmen were held to be of less account than those of expensive slaves. The third volume, "The Frontier Moves West," has an abundance of rich regional portraits. Lorenzo Dow, a revivalist in 1804, tells of the camp meeting where saplings had to be cut breast high for the convenience of people "to jerk by" after a hot hell-fire sermon. One young lady, he notes with disapproval, was "almost jerked out of her skin" by the raptures induced at the meeting.

Not only is Professor Tryon to be congratulated for his well-conceived and splendidly-executed project, but his publisher, the University of Chicago Press, deserves thanks for the exceptional esthetic appearance of the three-volume set. This work is certain to enjoy the widest circulation.

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cortisone) from the adrenal cortices of the affected animal. During such stress situations, the ratio of the uric acid output to the creatinine output, which normally remains constant, rises significantly. This forms a convenient measurement of the intensity of the stress and the liberation of ketosteroids. The studies summarized below present the first use of animal parasites as stressors. About the sixth day the ratio rises significantly, drops within the normal range for several days, and then rises to a high level when the parasites are destroying much tissue. During the convalescent period it gradually returns to within the normal range by the seventieth day. In the fatal case, the ratio rises very sharply, until it reaches a peak at the time of death.

Mr. Bernard has also studied the creatine content of the urine. This substance, vital to muscular activity and usually conserved, is found in large amounts only when there is the considerable muscle destruction that one would expect in the invasion phase of trichinosis. On the tenth day, the creatine excretion is elevated and returns to normal by the fiftieth day. No data on creatine excretion was collected from the fatally infected group.

Mr. Bernard is now studying the blood, calcium, phosphorus, and alkaline phosphatase of sublethally infected hamsters. Soon after the larva migrates to the muscle, an enveloping capsule is built up around it by the host tissues. Later the capsule becomes encrusted with a hard insoluble calcium phosphate cyst. Alkaline phosphatase is the enzyme necessary for the deposition of the calcium salts.